

Policy Title: Congenital Heart Disease Pulse Oximetry Screening of the Newborn		Policy Number: MI C.3
Effective Date: 12/16/11	Reviewed By: M/I Nurse Review Council	Approval Date: 12/16/11
Executive Council Review Date: 12/16/11		Last Level of Review: 3
No. of Pages: 3		

PURPOSE

To facilitate the early detection and treatment of critical congenital heart disease by identifying those newborns with structural heart defects that are usually associated with hypoxia in the newborn period with the utilization of routine pulse oximetry screening of all eligible newborns.

SCOPE

UAMS M/I Nurses and designated UAP Staff. UAMS Pediatricians and Neonatologists. All eligible newborns infants delivered at or admitted to UAMS, Medical Center.

DEFINITION

CCHD: Critical Congenital Heart Disease; most severe form of congenital heart disease

RH: Right Hand

ACH: Arkansas Children's Hospital

Eligible Newborns: Includes all live newborns delivered at or admitted to UAMS, Medical Center except for newborns where the CCHD pulse oximetry screen has been determined not medically applicable; See Policy.

POLICY

All eligible newborn infants will be screened for CCHD prior to discharge with the use of pulse oximetry to identify pre and post-ductal low blood oxygen saturation. The CCHD pulse oximetry screen is not medically applicable for the following newborns (1) Newborn has been hospitalized for > 7 days prior to discharge (2) CCHD has been ruled out or diagnosed with an Echocardiogram (3) Newborn was diagnosed with CCHD prenatally. Screening will be performed on all other newborns unless the newborn is transferred to another facility at < 24 hours of age.

The primary targeted conditions for screening identification include: hypoplastic left heart syndrome, pulmonary atresia, tetralogy of fallot, total anomalous pulmonary venous return, transposition of the great arteries, tricuspid atresia and truncus arteriosus. A passing or negative screen does not exclude the possibility of CCHD.

PROCEDURE

NEWBORN SCREENING

1. Routine Pulse Oximetry screening will be initiated after the eligible newborn is at least 24 hours of age and prior to discharge as long as the newborn has not been hospitalized > 7 days. Ideally all eligible newborns are to be screened when they are 24 – 48 hours of age. If the newborn is in NICU and is on oxygen or respiratory support the screen will be performed as soon as possible after the infant has been weaned from oxygen as long as the newborn is still eligible for screening.
2. Infant should be warm, alert and calm and screen completed in a quiet environment. Avoid screening infant during a period of deep sleep.
3. Inform parents about screening procedure and purpose. Provide patient education material for review.
4. The initial screen may be completed by designated UAP staff and results reported to the nurse. Any follow-up screens and assessments indicated will be performed by the nursing staff.
5. Select testing sites on the right hand and one foot that are clean and dry.
6. Reusable pulse oximetry probes will be utilized for screening except in the NICU patient care areas. Disposable pulse oximetry probes will be utilized in NICU and in the other M/I care areas as needed; following screen completion any disposable probes used will be recycled through the UAMS RT Pulse Ox Probe Recycle Program.

7. Obtain a pulse ox reading at each site, RH and foot, either at the same time or within a 5 minute time period of each other. Evaluate pulse ox reading for at least 30 seconds to ensure that the device is appropriately tracking the baby's pulse rate.
8. Document the pulse oximetry readings on the CHD screening form MR 1659 and report findings as indicated.
9. Any screening where the oxygen saturation is $\geq 95\%$ in the RH or Foot and there is $\leq 3\%$ difference between the RH and Foot, this is considered a negative or **PASSED SCREEN** and screening is complete.
10. Any screening where the saturation is $<90\%$ in either the RH or Foot this is considered a positive or **FAILED SCREEN** and requires immediate assessment and physician follow-up to rule out CCHD. Infant should remain on pulse oximetry and monitoring continued until instructed otherwise by the physician.
11. Any screening where the saturation is between 90 – 94% in both the RH and Foot or there is $>3\%$ difference between the RH and Foot on three different measures, each separated by one hour is considered a positive or **FAILED SCREEN** and requires follow-up to rule out CCHD.
12. If the initial screen indicates an oxygen saturation of 90 – 94% in both the RH and Foot or there is $>3\%$ difference between the RH and Foot initiate follow-up:
 - a. Nurse will assess the newborn and notify the Pediatrician and/or Neonatologist caring for the newborn of the results of the initial screen.
 - b. Nurse will plan and perform a repeat Pulse Oximetry screen in 1Hour; all follow-up screens will be completed by nursing staff.
 - c. If readings persist on the second screen, plan and perform a repeat Pulse Ox screen in 1 Hour
 - d. If readings persist on the third screen this indicates a final positive or **FAILED SCREEN**
 - e. Notify Pediatrician and/or Neonatologist of Failed Screen and initiate physician management plan.
 - f. If during either the second or third f/u screen the newborn has a pulse oximetry screen where the saturation is $\geq 95\%$ in either the RH or Foot with a $\leq 3\%$ difference between the RH and Foot this is considered a final **negative or Passed Screen** and screening is complete. The Nurse will notify the physician of the final screen results.
 - g. If during either the second or third f/u screen the newborn has a pulse oximetry screen where the saturation is $<90\%$ in either the RH or Foot this is considered a final **positive or Failed Screen**; initiate follow-up for a failed screen.

MANAGEMENT PLAN

PASSED SCREEN (Negative Screen)

1. Document pulse oximetry readings, results and the completion of screening on the Congenital Heart Disease Screening Form MR 1659 and place form in the newborn's medical record.
2. If screen completed by UAP, they are to notify the nurse assigned to newborn of the screen results and completion of the screen.

FAILED SCREEN (Positive Screen)

1. Any newborn with a positive screen for CCHD requires a comprehensive evaluation for causes of hypoxemia. In the absence of other findings to explain hypoxemia, CCHD needs to be excluded based on a diagnostic echocardiogram.
2. The Nurse will notify the newborn's physician of any failed or positive screen results and a physical assessment of infant will be initiated.
3. Document pulse oximetry readings and final results of the screening on the Congenital Heart Disease Screening Form MR 1659 and place form in the newborn's medical record.
4. Neonatologist will be consulted and infant transferred to NICU for continued CCHD evaluation and assessment and referral to a Pediatric Cardiologist at ACH as indicated.

FOLLOW-UP

1. Congenital Heart Disease Screening Form will be completed and placed on the newborn's medical record.
2. The results of screen will be documented on the Infant Discharge Summary under Newborn Requirements in the EMR and communicated to the newborn's primary care provider.

3. Parent(s) will be informed of screening results and implications of these results.

SUPPLEMENTAL INFORMATION

Medical Management Plan for a Failed/Positive Newborn Screen for CCHD

1. If the newborn infant fails pulse oximetry screening and is **symptomatic**:
 - a. Infant will be transferred immediately to the UAMS NICU with appropriate stabilizing care as needed.
 - b. Neonatology will be consulted to evaluate infant for possible transfer to ACH for cardiology evaluation.
2. If newborn infant fails pulse oximetry screening and is **asymptomatic**:
 - a. Infant will be transferred immediately to the UAMS NICU for monitoring and evaluation and neonatology consulted.
 - b. An echocardiogram will be done at UAMS if a failed or positive screen is identified between 0800 and 2000 (7 days a week).
 - c. If the infant remains asymptomatic and the failed or positive screen was identified at a time other than 0800 – 2000, the neonate will be monitoring in the UAMS NICU, and an echocardiogram will be obtained at the next available time the next day at UAMS.
 - d. If the echocardiogram reveals critical congenital heart disease, neonatology will evaluate infant for possible transfer to ACH for cardiology evaluation and care.

FORMS

[Congenital Heart Disease Pulse Oximetry Screening Form MR 1659](#)

[Congenital Heart Disease Screening Program - Patient Education Handout \(Eng/Span\)](#)

REFERENCES / EVIDENCE

Kemper, Alex R. et al; Strategies for Implementing Screening for Critical Congenital Heart Disease, American Academy of Pediatrics; Pediatrics; October 10, 2011.

Children's National Medical Center. Congenital Heart Disease Screening Program Toolkit: A Toolkit for Implementing Screening. Washington, DC: Children's National Medical Center; 2009.

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